U. S. DEPARTMENT OF COMMERCE

BUREAU OF FISHERIES

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MARKET FOR FRESH OYSTERS IN FOURTEEN CITIES OF THE UNITED STATES [1]

By J. M. Lemon, *Associate Technologist, U. S. Bureau of Fisheries*

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INTRODUCTION

The oyster is found in every seacoast State in this country, and a commercial fishery for it is conducted in all these States except Maine and New Hampshire. According to recent figures [2] the production of oyster meats in 1929 was 155,824,000 pounds valued at $16,825,000 to the commercial oystermen. A considerable proportion of this is taken from privately owned oyster beds upon which the oysters are farmed; that is, the oysters are planted and harvested in a manner comparable to the planting and harvesting of crops on land. During the past few years the proportion of each season's catch of oysters taken from private beds has increased; and as time goes on it is expected that the bulk of the catch may be taken from farmed beds. Further, it is expected that the total annual catch will greatly exceed the present annual yield. Desiring to be prepared for such a condition so that sales would not slacken, the oyster industry requested the Bureau of Fisheries to ascertain conditions surrounding the sale of oysters. As a result, this survey was

[1] Approved for publication Feb. 14, 1931.

[2] Fishery Industries of the United States, 1929, by R. H. Fiedler. Fisheries Document 1095, 364 pp., 29 figs., Washington.

made by the bureau in cooperation with the Oyster Growers and Dealers Association of North America (Inc.), and various State officials. Information was obtained by personally interviewing 127 dealers and 1,393 housewives in 14 cities of the country.

METHODS OF STUDY

In the conduct of the survey an interview was desired with housewives and others in a representative number of cities in the United States. It was further desired that each of these cities should differ as far as possible from one another in composition of population, proximity to oyster producing areas, industrial structure, and climate inasmuch as it was believed that these factors might have a bearing on the consumption of fresh oysters. After conference with various oyster producers the following cities situated in widely separated sections of the country were selected for the survey: Washington, Baltimore, Denver, Oklahoma City, Kansas City, Des Moines, St. Paul, St. Louis, Chicago, Buffalo, Columbus, Chattanooga, Birmingham, and Atlanta.

Having decided upon the cities to be canvassed, the writer proceeded to each in turn during the period from June to December, 1929, and interviewed certain individuals and sea-food dealers regarding the use and sale of oysters. It will be realized that all the inhabitants of the 14 cities could not be interviewed; therefore, a method was devised which would show as nearly as possible an average picture of that city. In order to do this a map of the city visited was laid out flat on a table and 50 grains of rice were dropped from a point about 3 feet above the center of the map. The location of the squares or blocks upon which each grain of rice dropped was noted. Later the housewives and seafood dealers in those squares were interviewed. In all, persons in 50 blocks were interviewed in each city. Being selected in this manner they were widely scattered over the entire city and, therefore, it is believed that replies were obtained from a fairly representative number of persons.

Some difficulty was encountered in obtaining personal interviews with housewives in the homes of the wealthier class of people. In some of these homes having servants it was difficult to obtain any information whatsoever. Others gave the information, but in such a reluctant manner that it is of doubtful value. However, of necessity, all of these data obtained in this manner were considered in the tabulations. In those sections of the cities in which the poorer families lived the investigators were met with suspicion, and it was extremely difficult to obtain answers to the questions asked. Sometimes in order to obtain any sort of an answer it was necessary to spend excessive time and explanations as to the reason for the questioning. Quite often replies were such that it was difficult to tabulate them. However, as a general rule, most of those interviewed supplied information willingly and truthfully, and the proportion which falls in the two classes discussed above was small. For this reason the data obtained can be considered as representative for each city visited.

In cases where there were stores handling sea-foods in the blocks where housewives were canvassed, proprietors of these stores also were interviewed. In cities where there were only a few sea-food stores in the whole town, all of these were interviewed. There were

numerous blocks in the residential sections of certain cities in which no stores of any kind were located, while others contained stores but none which handled sea foods. However, a representative number of stores handling sea foods was ultimately canvassed in each city and data obtained in this respect were fairly representative.

In each city visited a mail canvass also was attempted by mailing 200 questionnaires to persons chosen at random from the telephone directory. The returns from these questionnaires were so few as to be of little value and hence were not used in our tabulations.

TRADE IN OYSTERS

HARVESTING, PACKING, AND SHIPPING

Oysters are taken from the beds mainly by tongs operated from small boats or skiffs and by dredges operated from large boats and vessels. After taking they are brought to port and unloaded at the packing plant where they are prepared for shipment. National, State, and municipal Governments have awakened to the necessity of adequate regulations governing the harvesting and handling of oysters. These operations are now conducted under strict inspection and supervision, insuring their purity, until they are in the consumers' hands.

Fresh oysters are marketed shucked as well as in the shell. Those shucked are washed and then graded according to size. These, ranging from the smallest to the largest, are: Small, "standards"; medium, "selects"; large, "counts"; and extra large, "extra selects." After grading they are placed in tin containers with tight-fitting tops. These generally have a capacity of 1 to 5 gallons.

In recent years some producers have adopted the sealed quart, pint, and half-pint tin containers in addition to the larger sizes. These generally have stamped on them a trade-mark and the name of the producer. The oysters are packed directly in these containers and the covers are sealed on by a machine designed especially for this purpose.

After the containers are filled they are packed in barrels or boxes surrounded with ice and are ready for shipment. Great care is taken in the shipment of oysters to insure their arrival at their destination in good condition. For this reason shipments are made by fast freight, express, and motor truck, depending upon the size of the shipment and the length of the haul; the shipper selects that transportation service best adapted to the particular needs. The care of the oysters en route involves not only the maintenance of the proper cooling temperatures in warm weather but also the necessary precautions to keep them from freezing slowly in cold weather.

SHORT-LINE TRAVEL DISTANCES

Short-line travel distance and time consumed in transporting oysters from principal points of production to the cities canvassed were obtained from express and railroad companies. These data are shown in Table 1. Unless unavoidably delayed, shipments will arrive at the destinations mentioned therein within 1 or 2 hours of the time quoted in this table, since the figures given are the average time as actually recorded for a period of years. There are no express shipments from Port Norris, N. J. Morris River in that State is the nearest shipping point.

FREIGHT AND EXPRESS RATES

Freight and express rates on oysters from principal points of production to the cities surveyed in 1929 are contained in Table 2. This information was obtained from the Bureau of Traffic, Interstate Commerce Commission.

METHODS OF RETAILING

Displaying shucked stock.—Shucked oysters were displayed in retail stores visited in seven principal types of containers. Ranked in order of their importance they are: (1) In glass jars, about 46 per cent; (2) in stone jars, about 15 per cent; (3) in buckets or pails secured for this purpose by the retailer, 11 per cent; (4) in buckets or cans in which the oysters were originally packed at the production points, 9 per cent; (5) in shallow porcelain pans, 9 per cent; (6) in trade-marked sealed unit packages, 9 per cent; (7) in wells in specially constructed display cabinets, about 5 per cent. The first six of the above displays were usually placed in glass-covered show cases, the back of which was frequently open. Provision was made for refrigerating the oysters in each case. Except in the case of the sealed unit package, orders were filled by dipping the oysters from the large container into a carton or bucket.

The specially constructed display cabinets have an enameled metal lid and sides. These cabinets contain two compartments, the outside one being used for crushed ice for refrigeration while the inner contains a well supplied with a glass cover. The wells have a capacity of 5 to 10 gallons of shucked oysters. These cabinets generally are only loaned to the retailers by certain producers of oysters, although some retailers have purchased them outright. Producers loaning cabinets usually label them with their trade-mark.

Displaying shell stock.—The majority of the stores visited which marketed oysters in the shell made no attempt to display them to an advantage. Usually they were placed in buckets, jars, or pails. Sales were not generally made from these containers but rather were filled by obtaining the oysters from the baskets or barrels or from a pile of oysters on a near-by table. These latter as well as those in the buckets, jars, or pails were refrigerated with crushed ice, mixed in and around them. Frequently the shelled oysters after purchasing were shucked by the salesmen and then delivered to the customer in buckets or cartons. Some dealers made attractive window displays of oysters in the shell by laying them neatly on a bed of ice. This was true especially with those displays observed in windows of restaurants.

MONTHLY RETAIL TRADE CYCLE

In each city visited inquiry was made as to the trade during the season in retail stores marketing oysters, and the proprietors were asked to state the percentage of the season's business done during each of the eight months of the season. From this study it was found that on the average in all cities surveyed the sales during September were 3.03 per cent of the total sales during the season; October, 8.72 per cent; November, 18.61 per cent; December, 21.17 per cent; January, 20.11 per cent; February, 14.59 per cent; March, 9.39 per cent; and April, 4.38 per cent.

Dealers in Des Moines do not handle oysters in September on account of the popular belief in this section that cold weather is necessary in order that oysters may be "ripened" properly. The peak sales in December are due no doubt to the popular conception that oysters are a popular food for holidays and a supply of this food for two holidays is purchased during December.

WEEKLY RETAIL TRADE CYCLE

Inquiry also was made as to the trade during the week in retail stores marketing oysters, and the proprietors were asked to state the percentage of each week's business done on each of the six working

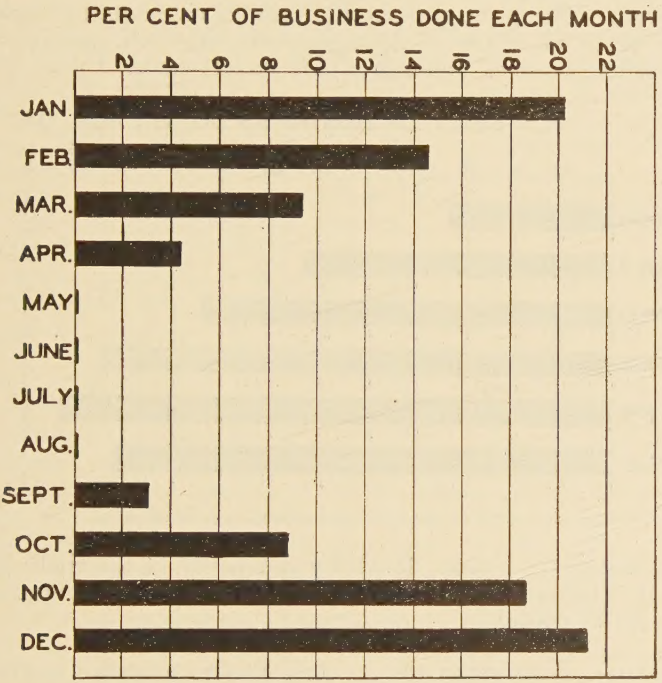

FIGURE 1.—Monthly retail trade cycle (average for all cities)

days of the week. From this study it was found that on the average in all cities surveyed the sales on Monday were 6.75 per cent of the week's business; Tuesday, 12.59 per cent; Wednesday, 16.78 per cent; Thursday, 20.99 per cent; Friday, 22.54 per cent; and Saturday, 20.35 per cent. From Table 3 it will be noted that the smallest sales during the week appear on Monday in every city visited. The largest sales were on Friday in 5 cities, on Saturday in 5 cities, on Thursday in 2 cities, on Wednesday in 1 city, and in Birmingham trade on Friday and Saturday were the largest and equal.

The heavy sales on Friday were no doubt due to the religious custom of the purchasers as well as to the general custom that Friday is considered as "fish day." Heavy sales on Saturday are due possibly to the fact that a supply of this food is bought on that day for consumption on Sundays.

GENERAL UNIT OF MEASURE SOLD AT RETAIL

Proprietors of sea-food stores marketing oysters were asked to state the general measure of oysters sold at retail. From this study it was found that the most popular unit was 1 pint, about 82 per cent of the dealers reporting that most of the sales were made in this unit. Some reported as being sold by number were marketed in the shell, usually by the dozen.

AVERAGE RETAIL PRICES

The average prices charged for oysters marketed were derived by taking the average price for the various units as quoted by the dealers interviewed. The price per one-half pint is calculated as being one-half the price of a pint. According to the data assembled, the average selling price of one-half a pint was 23 cents; 1 pint, 45 cents;

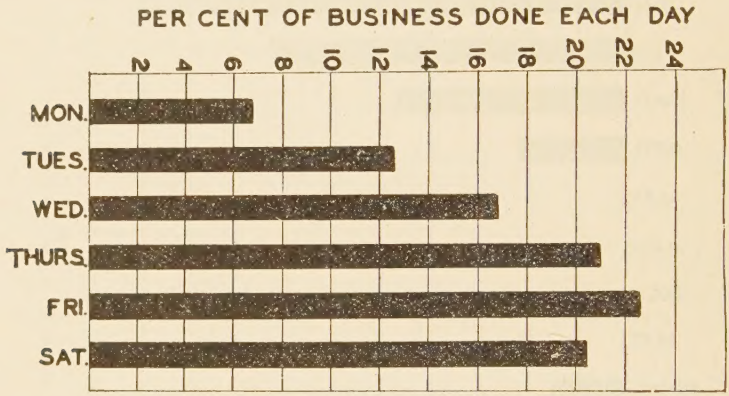

FIGURE 2.—Weekly retail trade cycle (average for all cities)

1 quart, 86 cents; 1 gallon, $3.08; by the dozen, in the shell, 26 cents. A number of firms in one of the cities sell 80 oysters, making practically a quart, for 75 cents.

METHODS OF ADVERTISING BY DEALERS MARKETING OYSTERS

Dealers marketing oysters were interviewed regarding the extent to which they advertised. Replies indicate that 51 per cent advertise in some form, but the remainder did not advertise in any form whatsoever. Advertising was conducted in newspapers, programs, telephone books, circulars, and price lists. Of those advertising in newspapers, 29 used this medium weekly, 17 monthly, and 6 daily. Twenty-six dealers used circulars; 14, telephone books; 3, price lists; and 2, programs.

Oysters were not featured in advertisements, but were usually mentioned along with other sea foods. During the course of the survey, particular notice was taken of sea-food advertisements published in the various cities visited, and only one advertisement was found which featured oysters exclusively.

POPULAR REACTIONS TO THE PURCHASE OF OYSTERS

In order to obtain popular reactions toward the purchase of oysters, housewives and others were interviewed and asked the following questions:

1. Do you read the newspapers for menu suggestions?
2. Do you buy oysters by brand?
3. Do you prefer to buy oysters in a unit package?
4. Do you prefer to buy oysters in bulk?
5. Do you care to have sent to you a circular giving 98 ways to prepare oysters?

By propounding the above questions it was believed that facts would be obtained regarding the stimuli urging housewives to purchase oysters and the manner in which they desire to purchase them.

There is a wide variance in the replies to the first question. In Kansas City 78.9 per cent of the housewives read advertisements in newspapers for suggestions as to possible variations in their menus, while in Buffalo only 8 per cent stated they used newspapers in this manner. Of the total number of housewives interviewed in all the cities it was found that 47.6 per cent make this a practice. Possibly this average is much lower than that which is actually true for the reason that after explaining the question in several instances the reply was changed to the affirmative.

The second question, as to whether the housewife preferred to buy oysters by brand, was asked to determine whether or not a brand on a package of oysters would increase confidence in the product. For example, if a certain brand of oysters was found to be in a first-class condition, it is probable that this brand would be purchased each time oysters were considered for the menu. The affirmative answers to this question are shown to vary from about 2 per cent in Washington to 91 per cent in Atlanta, with an average of about 45 per cent for the entire survey. Of course the extent to which oysters are purchased by brand is undoubtedly dependent upon whether branded oysters are available. During the survey they could be obtained in 18 per cent of the stores visited. There may be some reason to doubt the accuracy of some of the replies to this question. It is possible that a large number of those answering in the negative did not give ample consideration to the real meaning of the question. Undoubtedly, the branding of oysters would be a protection both to the producer and the consumer. The former would be protected against an inferior product being sold under his brand, and the latter would be protected by being able to recognize certain brands which proved satisfactory. On the other hand, if certain brands proved unsatisfactory, he could refuse to purchase them.

The third and fourth questions were asked to ascertain whether the demand for oysters would be increased by packing them at the point of production in convenient-sized containers which could be marketed as a unit. The market for many other kinds of foods in unit packages has increased to an enormous extent within the last few years, and it was desired to learn the attitude of the housewife toward packaged oysters. Replies to these two questions indicate a preference in favor of the purchase of oysters in bulk, since about 82 per cent desired to purchase in this manner, while slightly less than 18 per cent desired to purchase in packaged form. The comparatively small number

of affirmative replies to the third question may be due to the fact that the housewife is not yet acquainted with packaged oysters, never having had an opportunity to purchase them. In this connection, it is interesting to note that in Atlanta and St. Louis, where packaged oysters may be obtained, replies were about equally divided between buying in bulk or in unit packages; while, on the other hand, oysters may be purchased in packaged form in St. Paul and Chicago, and those favoring the purchase in bulk in these cities far outnumber those desiring to buy in packages. This may be due to the fact that in the latter cities the introduction of unit packages for oysters is a comparatively new innovation, having been introduced only during this last season.

The fifth question relative to a desire for a copy of Fisheries Economic Circular No. 58, entitled "Oysters: An important health food, with 98 recipes," by Lewis Radcliffe, was asked not only to acquaint those interviewed with new recipes, but it was believed that replies to this question also might indicate the desire of the housewives for this type of information. The requests for copies vary from 98 per cent in St. Paul, to 31 per cent in Buffalo, with an average of about 70 per cent desiring it. A copy of the publication was mailed to all those housewives who expressed a desire for it.

Whether it is a coincidence that the largest percentage of housewives requesting circulars was in the city with the highest per capita consumption of oysters is conjectural. However, correlating reported consumption of oysters in the various cities and the request for this publication in the same cities, it would appear that there is a very definite relation between the two. For instance, St. Paul has the highest per capita consumption and nearly all of those interviewed requested a circular. Conversely, only about one-third of the housewives interviewed in Washington desired a copy, and Washington shows a low per capita consumption of oysters. However, it may be that in some cities where oysters have been an article of diet for years that there is no desire for new ways of serving. This may account for the few requests in Washington, D. C., and Baltimore, Md.

POPULAR REACTIONS TO OYSTERS AS A FOOD

In order to obtain the reactions of housewives toward oysters as a food they were asked why they purchased or did not purchase them. According to the replies obtained, it was found that of all the housewives interviewed, about 77 per cent purchased oysters because they liked them; 36 per cent, because they considered they had a high food value; 28 per cent, because they were easy to cook; 5 per cent, because there was no waste and the whole is edible; about 2 per cent, because they wanted to eat a variety of foods and oysters supplied a portion of this variety; 0.4 per cent, because their immediate families liked them but the housewives personally did not care for them; and 0.3 per cent, for various miscellaneous reasons.

Of those housewives interviewed who did not use oysters, about 12 per cent did not purchase them because they did not like their taste; about 6 per cent, because the price was too high; about 5 per cent, because they believed that oysters sometimes caused illness; over 4 per cent, because they believed packing plants were unsanitary, and therefore the oysters might possibly be contaminated; about 1 per cent each, because they believed they were not kept fresh, and because

they did not like the appearance of the oyster. Others did not purchase because of religious beliefs, because they were not acquainted with their use, because the family did not like them, because they were on a diet, and for various other miscellaneous reasons.

FREQUENCY WITH WHICH OYSTERS WERE SERVED BY HOUSEWIVES

In order to learn the frequency with which oysters were served by housewives they were asked the number of times they served them per season. Replies to this question revealed that some served them once a week, some once a month, some several times a season, some "frequently," etc. In order to tabulate all of these replies they were considered in the following terms:

FREQUENCY WITH WHICH SERVED	Times per season
One time per season, "very seldom"	1
Two times per season, "real seldom"	2
Three times per season	3
Four times per season	4
Five times per season	5
Six times per season	6
Seven times per season	7
Eight times per season, "occasionally," "not often," "not very often," "once in a while," "now and then"	8
About once in three weeks	12
Twice a month	16
Two or three times per month	20
Three times per month	24
Three or four times per month	28
One time a week, "often," "frequently"	35
One or two times a week	52
Two times a week, "real often," "very often," "quite often," "quite frequently"	70
Two or three times a week	87
Three times a week	105
Three or four times a week	122

According to the tabulation, oysters were served most frequently 35 times a season or about once a week, since one-fourth of the housewives interviewed reported this frequency. About one-fifth reported serving oysters 8 times a season or about once a month. About one-tenth reported serving them 2 times a month or 16 times a season. Three housewives reported they served them 122 times a season or practically every other day.

METHODS FOR PREPARING OYSTERS BY HOUSEWIVES

In order to learn the popular methods for preparing oysters for the table, the housewife was asked the methods she used most frequently. Replies to this question reveal that out of 98 possible methods for preparing oysters only 15 were practiced to any extent. The most popular method was in the form of a stew, 52 per cent of the housewives reporting this method as used most frequently. Only about 15 per cent served them raw. In reference to this latter method it may be stated that this is one of the healthful methods and the only one by which the full benefit of all vitamins may be obtained. Other popular methods were scalloped, as a soup, as a dressing, baked, and in salads.

MEALS AT WHICH OYSTERS WERE SERVED BY HOUSEWIVES

The housewife was asked to state at what meal oysters were most frequently served. According to the replies obtained oysters were most popular for serving at dinner, since over three-fourths, 78 per cent, served them at this meal. They were somewhat popular for serving at luncheon, about 17 per cent eating them at this meal. About 3 per cent ate them for supper; that is, at a late meal after the theater or dance. Fourteen housewives served them for breakfast.

CONSUMPTION OF OYSTERS IN THE CITIES CANVASSED

During the course of the survey a total of 1,393 housewives was interviewed regarding whether they served oysters in their household. Of this number 1,209, or nearly 87 per cent, gave affirmative replies, while only 184, or about 13 per cent, gave negative replies. This indicates that oysters are considered a popular food among the mass of our population. Returns from each city indicate that 100 per cent of the housewives in St. Paul and St. Louis reported they served oysters, while the lowest affirmative replies were received in Chicago, where only about 67 per cent served oysters.

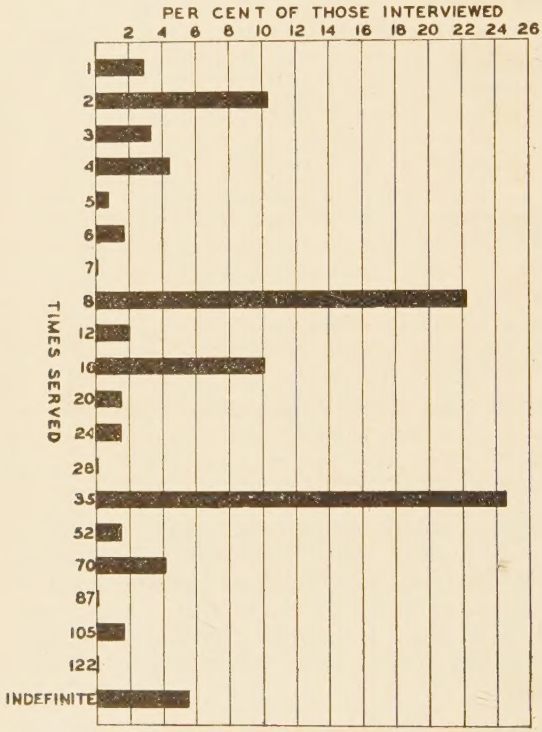

FIGURE 3.—Frequency of serving oysters during the season (average for all cities)

It is possible to arrive at an estimated annual per capita consumption of oysters in the cities canvassed. This has been done in the following manner: Each questionnaire has been taken to represent one family. Therefore we have 1,393 families. From this we have deducted those families (184) not served with oysters and those families in which the frequency with which oysters were served was "indefinite" (68). This leaves 1,141 families consuming oysters on some regular basis. Those families then use oysters, a total of about 24,000 times per season, which is calculated by multiplying the number of times used per season by the users. The average times used per family per season is 21 times, which is calculated by dividing the total number of times used (24,000) by the users (1,141). Considering that those housewives reporting they served oysters an "indefinite" number of times as "average users," we have to add to the 24,000 the figure 1,306 which is obtained by multiplying 68 by 21.

Thus, oysters were served to the families interviewed 25,306 times during the season.

It was determined that the general unit purchased is in amounts of 1 pint, which weigh about 1 pound. Thus, 25,306 pounds were consumed by the families interviewed.

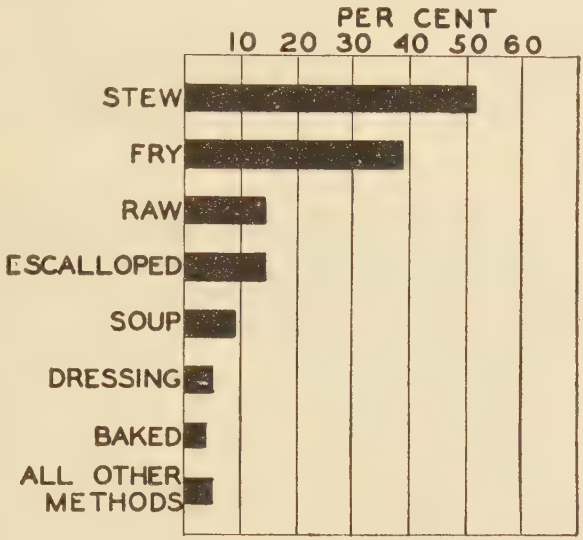

FIGURE 4.—Popularity of methods for preparing oysters (average for all cities)

The average size of the families in the cities canvassed, according to United States Bureau of the Census figures [3] is composed of 4.2 persons. Thus, since 1,393 families were interviewed, the population as reported by these is 5,850 persons. These used 25,306 pounds of

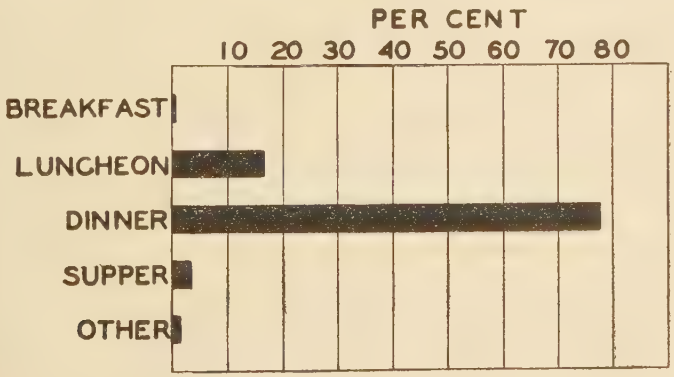

FIGURE 5.—Designation of the meals at which oysters were served (average for all cities)

oysters, giving an annual per capita consumption of 4.32 in the cities surveyed.

The average number of individuals in the families as obtained from the United States Bureau of the Census is not applicable to rural

[3] Report of the U. S. Bureau of the Census, 1920, Vol. II.

communities. It also should be remembered that these data were obtained from interviews with only a small fraction of the population of each of the cities visited, and for this reason the figure on the per capita consumption can be considered only as an estimate. Two errors are believed to be apparent in the results for St. Louis and St. Paul. In each of these cities every one interviewed consumes oysters. However, it hardly seems reasonable to suppose this applies to every family in these two cities. Nevertheless, this is our only means for determining the per capita consumption, and results should be considered merely as an estimate. Neither should this estimate be considered as applicable to the country as a whole, since it is believed

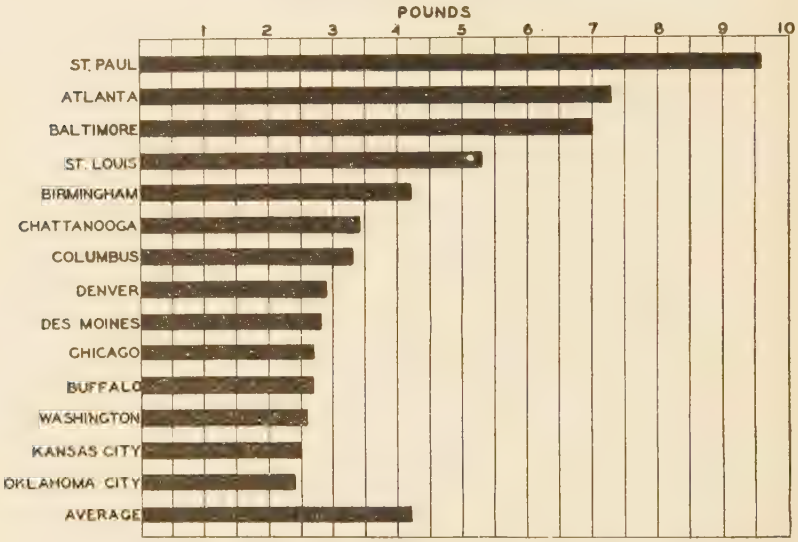

FIGURE 6.—Per capita consumption of fresh oysters in the various cities

that a great portion of the persons living in rural communities seldom use fresh oysters.

RETAILERS' REACTIONS TO THE SALE OF OYSTERS

Certain retail stores in each of the towns surveyed were canvassed and the proprietors of these were asked the following questions regarding their reactions toward the sale of oysters:

1. Are shucked oysters sold in unit packages as packed at the production point?
2. Do purchasers call for certain brands of oysters?
3. Do purchasers call for certain kinds of oysters?
4. Do purchasers call for certain sizes of oysters?
5. Does the price of oysters affect their sale?

Replies to the above questions indicate that of the retailers interviewed only 22 per cent marketed oysters in original containers or unit packages as packed in the production point. This confirms somewhat the view of the housewives.

Seventy-eight per cent of the retailers stated that oysters are almost always asked for according to size. This high percentage pos-

sibly may be explained by the fact that size determines the price. Following this along it is found that the medium size "select" oyster was in most demand by purchasers, this size of oyster being medium priced. This also confirms the belief of retailers that price affects sale, since it was noted that 65 per cent of the retailers interviewed believed that it did.

That purchasers are not accustomed to buy oysters by kind is attested by the fact that of the retailers interviewed only 7 per cent stated that purchasers asked for a certain kind of oyster, such as "Bluepoint," "Lynnhaven," etc.

FINDINGS [4]

As a result of this study it has been found that—

1. About one-half of the housewives interviewed read newspapers for menu suggestion.
2. About one-half of the housewives interviewed desired to purchase oysters by brand.
3. In cities where oysters were obtainable in convenient unit packages as packed at the point of production, about one-half of the housewives desired to purchase them in this manner.
4. Of the housewives interviewed who purchased oysters, three-fourths did so because they liked their taste; about one-third because they considered them high in food value; and about one-fourth because they found them easy to cook.
5. Of the housewives interviewed who did not purchase oysters, one-eighth stated as their reason that they did not like their taste.
6. Practically nine-tenths of the housewives interviewed served oysters in their household at least once a season; about one-fourth, once a week; and about one-fifth, once a month.
7. About one-half of the housewives interviewed reported that oysters were served in their household most frequently in the form of a stew. About two-fifths of them served oysters fried.
8. Over three-fourths of the housewives interviewed served oysters generally at dinner—the meal at about 6 p. m.
9. The per capita consumption of oysters in the cities surveyed averaged 4.2 pounds annually.
10. In all cities visited about one-fifth of the dealers marketing oysters sold them in unit packages as packed at the production points.
11. Purchasers almost always asked for oysters according to size, the most popular size asked for being the "medium."
12. Only about one-fifth of the purchasers of oysters asked for them by brand.
13. Less than one-tenth of the purchasers of oysters asked for them according to kind, such as "Bluepoint," "Lynnhaven," etc.
14. Nearly one-half of the retailers displayed shucked oysters in glass jars. Other popular methods were in stone jars, in buckets, in pails, in porcelain pans, in unit packages as packed at the production point, and in specially constructed display cabinets.
15. The largest daily sales of oysters during the week were made on Friday; the smallest on Monday.

[4] It should be remembered that the questionnaires were so worded that it was possible to give two or three replies to some of the questions. For this reason the fractions appearing in these findings often will add to more than a whole.

16. The largest monthly sales during the oyster season were made in December and January; the smallest, in September and April.

17. Shucked oysters were sold at retail usually in units of one pint, nearly four-fifths of the dealers reported.

18. The average retail prices of oysters were 23 cents per one-half pint; 45 cents, per pint; 86 cents, per quart; $3.08, per gallon; and by the dozen, in the shell, 26 cents.

19. What advertising was done by dealers was usually conducted in newspapers.

20. According to the data at hand there does not seem to be any correlation between climatic conditions in the various cities and consumption. It might be supposed that southern cities having fewer cooler months would show a low per capita consumption. St. Paul in our northern latitude is followed closely in consumption by Atlanta, a southern city, and in turn by Baltimore, which is in between. Oklahoma City, a southern city, shows a low per capita consumption while Buffalo, a northern city, shows about the same per capita. For these reasons it appears that no correlation exists in this connection.

21. Proximity to production centers for oysters does not seem to affect consumption. Baltimore is right at a production point and shows a fairly high consumption per capita, while Washington, D. C., only a few miles removed, is below average; and St. Paul, far to the northwest, shows the highest per capita consumption of any city visited.

22. Composition of population or industrial structure does not appear to be a deciding factor. Birmingham, an industrial city, shows about average consumption, while Buffalo and Chicago are below, and Baltimore above average.

DISCUSSION

Since it has been found in the course of the survey that the primary factor influencing the consumption of oysters is taste and that there are many potential consumers to whom the taste is not particularly pleasing, it would be well to stress the nutritive and health appeal. This would tend to induce that class of people to purchase simply because of these factors alone. At the same time they would be cultivating a taste for oysters. In addition, those who now use oysters because they enjoy their taste would have an added inducement to consume them more frequently.

As an article of diet the oyster is one of the most enjoyable and healthful delicacies which are given to us from the sea and is one of the easiest foods to digest and assimilate. It is very rich in elements required for the growth and maintenance of a healthy body, lacking only starch to make it a complete food. The Department of Agriculture has found [5] that one pound of oysters contains 7 per cent of the energy, 28 per cent of the protein, 35 per cent of the calcium, 53 per cent of the phosphorus, and 136 per cent of the iron needed by a man daily.

Recent investigations have demonstrated that raw oysters contain an abundance of three very important vitamins; namely, A, B, and

[5] Food Values and Body Needs Shown Graphically, by Emma A. Winslow, U. S. Department of Agriculture, Farmers' Bulletin No. 1383.

C. In addition, there are strong indications that vitamin D also is present to a limited extent. All of these vitamins are so essential to health that even the total absence of one of them is quite detrimental to the well-being of the body. The public is rapidly becoming informed as to the value of vitamins in the diet, and if the fact that oysters contain an abundance of vitamins were brought to their attention it might lead to an increase in the demand for them.

According to Tressler and Wells,[6] oysters, clams, and lobsters contain more iodine than other marine food with the exception of marine algæ, which unfortunately do not enter into the dietary of many persons in this country. The above investigators also have found that oysters, clams, and lobsters contain about 200 times as much iodine as milk, eggs, and beefsteak.

By including oysters in the diet several times a week, considerable quantities of iodine are taken into the system. This should be of particular interest to families having growing children and young people, and also to persons living in sections of the country where disorders of the thyroid gland are common.

One of the chief constituents of the oyster is a substance resembling starch, known as glycogen, which is quite necessary in the diet. It is practically predigested and is ready for use by the tissue or for storing in the body for future use. It is far more digestible than starch and even in the uncooked state is almost wholly digested.

It has been revealed that price is a determining factor in a few instances in the purchase of oysters. This objection might be met with an explanation that in a purchase of oysters the entire amount can be consumed, which is not true with many other foods.

According to the data collected, 95 per cent of the consumers prepare oysters in only seven different ways. In order to increase the consumption of oysters it might prove profitable to demonstrate the great variety of methods by which oysters can be prepared. It has been pointed out that there are at least 98 possible methods of preparation.

In considering influences which might have an effect on the increase or decrease of the consumption of oysters, one of the more important is that of attractive displays of the retail stock. If the retail dealers could be persuaded to display their stock of oysters in attractive arrangements and in the most sanitary ways, it is possible that an appreciable increase in sales would follow. It was found that many of the dealers displayed or held oysters in an unattractive container, some even placing a large piece of ice in the container with the oysters. The melting of the ice causes an additional amount of water to be included with each sale of oysters. This gives the consumer the impression that he is purchasing an excessive amount of water with the oysters. Quite often the producer is given the blame for placing this additional amount of water in with the oysters.

Marketing oysters in a trade-marked and sealed unit package for distribution direct to purchasers deserves special attention. This practice is in keeping with the modern trend in the food industry of packing at the production points, or at the factory, in units suitable for purchase in their entirety by the consumers. This may stimulate consumers' confidence and give the consumer an oppor-

[6] Iodine Content of Sea Foods (with Bibliography), by Donald K. Tressler and Arthur W. Wells; App. I, Report, U. S. Commissioner of Fisheries, 1924.

tunity to purchase goods of uniform quality and known origin. At present some purchases are made by kind or brand. It was further shown that most purchases are made in units of 1 pint. Since this is the case, why not market a pint package put up at the production point, labeled and trade-marked? This also makes a saving in time and in labor for the retailer as it eliminates dipping the oysters from the large, open container into a smaller container to take home. It also eliminates the possibility of contamination or adulteration by the addition of ice or water after the oyster leaves the packer. Further, the trade-mark serves as a protection against imitation and assures a known product of uniform quality. An additional advantage of the smaller sized container is that it is more easily refrigerated than one of larger size. This is explained by the fact that the smaller container presents a proportionally greater surface for the application of refrigeration than does a large one. This is a consideration of importance since it is imperative that oysters be kept cool from the time they are packed until consumed, if they are to remain in prime condition.

The ease with which oysters are digested should cause them to be classified among those foods particularly adapted for consumption during hot weather. In the course of digestion, foods high in calorific value generate a large amount of heat within the body which is not necessary when the temperature of the surrounding atmosphere is also high. The calorific or heat value of oysters should not be confused with the food value as these are two entirely separate and distinct values. The heat value of the oyster is low and the elements which constitute its food value are so arranged as to be available with a minimum release of heat. The popular misconception that oysters are only suitable for food during the fall, winter, and spring months causes the public to be deprived of one of the most valuable of summer foods, and causes the yearly income of the producers to be limited to two-thirds of the year.

A consideration which is worthy of the attention of oyster producers is that of packing and marketing rapidly frozen oysters in unit packages as packed at the production point during the months when the harvest is at its height. This surplus could then be marketed during the months when there is no production. It has been demonstrated that oysters can be rapidly frozen and held in storage for several months without any detrimental effects upon the taste, color, digestibility, and food value, and that they can be marketed in any season. Experts who have handled and eaten oysters for years have not been able to distinguish between those which had been taken from storage and those which had been removed from the water only a day or two previously. Quick freezing and storing could be utilized to distribute the sales of oysters over the entire year and thereby add four months to the oyster-marketing season. As has been stated previously, purchasers generally buy, during the winter months, sealed packaged fresh oysters in those cities where the public has become acquainted with them. It view of this, it is believed that with very little publicity and education frozen packaged oysters could be marketed in the summer months. Many wholesome dishes for summer consumption can be made from oysters. For instance, for the hot dish of the meal oysters in the form of a stew or soup should be readily acceptable. If the marketing of frozen

packaged oysters in the summer months were successfully promoted and the public became convinced that they are as good in this season as in the winter season, the yearly sales should show a decided increase. Considering that the sales now amount to $16,000,000, over an 8-month period, extending the season four months would be equivalent to an increase of 50 per cent. Thus, about $8,000,000 would be added to the receipts of the industry as a whole.

It has been disclosed that there is a wide fluctuation in the daily sales of oysters over a period of a week. While this is not as great as in some other sea foods there is an opportunity to increase the sales on those days which are shown to be low in sales. It is also demonstrated that the sales show a wide range of fluctuation over the months of the season. A well-directed advertising campaign stressing the value of oysters as a health food and the ease with which they may be prepared might have a far-reaching effect in increasing the sales on those days of the week and months of the year which show the lowest sales. It was observed that many of the neighborhood retail stores handled oysters only on one or two days during the week, and in order that patrons of these stores might obtain oysters it was necessary to purchase them on the days when a supply was on hand. If the desire for oysters arose at a time other than the days on which the neighborhood store handled them, the purchaser frequently found it compulsory to make a special trip to the down town sections of the city. This condition could be overcome by interesting proprietors of neighborhood stores in the marketing of oysters daily, thereby effecting more adequate distribution.

Distribution costs add to the price which consumers need to pay for oysters. These costs include packing, transportation, ice, handling, selling, etc. In these operations there is considerable duplication of effort. For instance, unless the oysters are packed in a container suitable for sale as a unit, it is necessary that they be repacked somewhere along the line. This entails time and labor and adds to the ultimate cost of the oysters to the consumer. Transportation costs are usually higher than necessary, due to the fact that in a large number of cases the shipment is made by "less than a car lot" express rather than via "car lot" express or "car lot" fast freight. Shipments of "less than a car lot" are billed at higher rates than "car lot." To obtain a lower rate distributors of oysters in some cities purchase through a broker located in that city. The broker then pools the shipment and is thereby enabled to ship by the lowest rate obtainable. Shipments in car lot also conserves ice and expensive handling. Much effort and expense are duplicated by shippers in communicating with prospective purchasers. Many times a dealer will receive two or more telegrams quoting prices from two or more producers. Sometimes these producers are in the same city and in other cases they may be in different cities. This confuses prospective purchasers, especially if the quotations differ for apparently the same kind and grade of oysters. Economies in the marketing and distribution of oysters could, no doubt, be made through an effective cooperative association of producers and shippers. In this manner advantage could be taken of "car lot" rates, expenses relative to obtaining orders might be lowered, and other economies effected.

It is a well-recognized fact of retail merchandising that an attractive display of goods enables a sale to be consummated in much less time than that required where there is no display or a poor display. If some system of offering the retail merchant diagrams or lithographs of attractive displays were put into effect, it would enable the small dealer to have the advantage of the services of skilled and expert advertising writers. An attractive display would immediately focus the attention of the prospective purchaser on the product displayed and the suggestion to purchase would follow. Thus, the sale would be practically closed before the salesman had devoted any time to making it. This fact would tend to lower the price of handling, and in turn mean lower prices to the consumer.

TABLE 1.—*Short-line travel distance and time consumed in transporting oysters from principal points of production to cities surveyed, 1930* [1]

From→ / To ↓	Crisfield, Md.			Baltimore, Md.			Norfolk, Va.			Lynn Haven, Va.		
	Hrs. by expr.	Hrs. by frt.	Miles by R. R.	Hrs. by expr.	Hrs. by frt.	Miles by R. R.	Hrs. by expr.	Hrs. by frt.	Miles by R. R.	Hrs. by expr.	Hrs. by frt.	Miles by R. R.
Washington, D. C	20	96	243	6	72	40	18	96	378	24	96	428
Baltimore, Md	14	48	203				24	72	418	30	72	468
Denver, Colo	82	264	2,060	68	240	1,857	74	264	1,797	80	264	1,817
Oklahoma City, Okla	74	192	1,924	60	168	1,721	63	192	1,672	69	192	1,722
Kansas City, Mo	59	120	1,516	45	96	1,313	48	120	1,410	54	120	1,460
Des Moines, Iowa	57	264	1,398	43	240	1,195	53	264	1,264	59	264	1,214
St. Paul, Minn	72	168	1,457	58	144	1,254	67	168	1,340	73	168	1,390
St. Louis, Mo	44	96	1,130	30	72	927	40	96	995	46	96	1,045
Chicago, Ill	42	96	1,026	28	72	823	36	96	1,110	42	96	1,160
Buffalo, N. Y	36	96	680	22	72	477	42	96	870	48	96	920
Columbus, Ohio	34	96	721	20	72	518	34	96	680	38	96	730
Chattanooga, Tenn	50	144	1,175	36	120	972	26	144	650	32	144	701
Birmingham, Ala	52	192	1,048	38	168	845	30	192	793	36	192	843
Atlanta, Ga	34	144	878	20	120	677	24	144	669	30	144	719

From→ / To ↓	Port Norris, N. J. [2]			Norwalk, Conn.			New Haven, Conn.		
	Hrs. by expr.	Hrs. by frt.	Miles by R. R.	Hrs. by expr.	Hrs. by frt.	Miles by R. R.	Hrs. by expr.	Hrs. by frt.	Miles by R. R.
Washington, D. C		72	196	12	96	264	13	96	299
Baltimore, Md		48	148	12	72	228	13	72	262
Denver, Colo		240	1,875	80	264	2,085	81	264	2,119
Oklahoma City, Okla		168	1,743	73	192	1,949	74	192	1,983
Kansas City, Mo		96	1,485	58	120	1,541	59	120	1,575
Des Moines, Iowa		240	1,351	55	264	1,423	56	264	1,457
St. Paul, Minn		144	1,451	70	168	1,482	71	168	1,516
St. Louis, Mo		72	939	38	96	1,092	39	96	1,126
Chicago, Ill		72	823	30	96	1,015	31	96	1,049
Buffalo, N. Y		72	541	14	96	477	15	96	517
Columbus, Ohio		72	628	48	96	735	49	96	769
Chattanooga, Tenn		120	1,160	68	144	1,201	64	144	1,234
Birmingham, Ala		168	972	50	192	1,073	51	192	1,107
Atlanta, Ga		120	721	38	144	805	39	144	839

[1] The data contained in this table was obtained from the railroads and express company.
[2] No express shipped from this point.

TABLE 1.—*Short-line travel distance and time consumed in transporting oysters from principal points of production to cities surveyed, 1930*—Continued

From→ / To ↓	New York, N. Y.			Greenport, N. Y.			Providence, R. I.		
	Hrs. by expr.	Hrs. by frt.	Miles by R. R.	Hrs. by expr.	Hrs. by frt.	Miles by R. R.	Hrs. by expr.	Hrs. by frt.	Miles by R. R.
Washington, D. C	10	24	224	15	48	330	14	96	409
Baltimore, Md	10	24	187	15	48	199	14	48	372
Denver, Colo	78	240	2,044	83	240	2,149	82	264	2,220
Oklahoma City, Okla	71	168	1,908	76	192	2,013	75	192	2,093
Kansas City, Mo	56	96	1,500	61	120	1,608	60	120	1,685
Des Moines, Iowa	53	240	1,382	58	264	1,486	57	264	1,567
St. Paul, Minn	68	144	1,441	73	168	1,547	72	168	1,626
St. Louis, Mo	36	72	1,051	41	96	1,160	40	96	1,236
Chicago, Ill	28	72	974	33	96	1,081	32	96	1,159
Buffalo, N. Y	12	72	436	17	96	541	16	96	621
Columbus, Ohio	46	72	694	51	96	799	50	96	879
Chattanooga, Tenn	66	120	1,159	71	144	1,263	70	144	1,344
Birmingham, Ala	48	168	1,032	53	192	1,139	52	192	1,217
Atlanta, Ga	36	120	764	41	144	875	40	144	949

TABLE 2.—*Freight and express rates on oysters from principal points of production to cities surveyed, 1930*

[Prepared by the Interstate Commerce Commission, Bureau of Traffic, Washington, D. C.]

From→ / To ↓	Crisfield, Md.			Baltimore, Md.			Norfolk, Va.			Lynn Haven, Va.		
	Freight		Express	Freight		Express	Freight		Express	Freight		Express
	C. L.	L. C. L.	L. C. L.	C. L.	L. C. L.	L. C. L.	C. L.	L. C. L.	L. C. L.	C. L.	L. C. L.	L. C. L.
Washington, D. C	85½	128	124	31½	47½	86	85½	128	142	117½	197	142
Baltimore, Md	56½	56½	109	------	------	------	68½	103	[2] 273	100½	172	[2] 273
Denver, Colo	361½	485	592	351	474½	544	343	462½	[2] 580	375	531½	[2] 580
Oklahoma City, Okla	266	313	487	258	303	450	263	309	469	295	378	469
Kansas City, Mo	228½	331	386	221½	320½	352	213½	308½	[2] 357	245½	377½	[2] 357
Des Moines, Iowa	201½	296	371	194½	285½	322	186½	273½	[2] 357	218½	342½	[2] 357
St. Paul, Minn	262	304	394	195	292½	367	195	268½	[2] 377	277	337½	[2] 377
St. Louis, Mo	165	247½	300	158	237	292	150	225	[2] 273	182	294	[2] 273
Chicago, Ill	141	211½	292	134	201	270	126	189	[2] 273	158	258	[2] 273
Buffalo, N. Y	106½	114	221	79	118½	184	106½	114	247	138½	183	247
Columbus, Ohio	113½	165	232	103	154½	210	106½	154½	[2] 210	138½	223½	[2] 210
Chattanooga, Tenn	131	280½	285	126	270	270	[3]	259½	266	132	282	266
Birmingham, Ala	146	352	311	141	302½	[4] 243 / [4] 300	[5]	298½	289	142	304½	289
Atlanta, Ga	130	219	281	125	267	[4] 269 / [3] 239 / 281	[3] 239	256½	255	125	263½	255

From→ / To ↓	Port Norris, N. J.			Norwalk, Conn.			New Haven, Conn.		
	Freight		Express	Freight		Express	Freight		Express
	C. L.	L. C. L.	L. C. L.	C. L.	L. C. L.	L. C. L.	C. L.	L. C. L.	L. C. L.
Washington, D. C	66	99	[1]	85½	129	154	85½	129	169
Baltimore, Md	56½	85	[1]	78	117	139	78	117	154
Denver, Colo	360	488	[1]	359	486½	585	359	486½	604
Oklahoma City, Okla	266	313	[1]	275	323	487	275	323	499
Kansas City, Mo	230½	334	[1]	229½	332½	386	229½	332½	401
Des Moines, Iowa	203½	299	[1]	202½	297½	364	202½	297½	382
St. Paul, Minn	196	294	[1]	225½	311	405	225½	311	409
St. Louis, Mo	167	250½	[1]	166	249	311	166	249	326
Chicago, Ill	143	214½	[1]	142	213	285	142	213	296
Buffalo, N. Y	84	123½	[1]	84	126	169	84	126	199
Columbus, Ohio	112	168	[1]	111	166½	255	111	166½	262
Chattanooga, Tenn	137	294	[1]	149	319½	300	149	319½	307
Birmingham, Ala	151	322½	[1]	230	345	322	230	345	334
Atlanta, Ga	135	289½	[1]	209	313½	311	209	313½	315

[1] Express agency closed July 1, 1914.

[2] Pound rates, minimum 34 cents per shipment. Rates do not apply locally over the lines of the Southeastern Express Co.

[3] 56 cents per 100 pounds, minimum weight 20,000 pounds; 84 cents per 100 pounds, minimum weight 12,000 pounds.

[4] Proportional rates, applicable via Southeastern Express Co. only upon shipments originating at Cambridge or Crisfield, Md. Minimum charge on any shipment will be the charge for 10 gallons, at Official Express Classification weight basis.

[5] 65½ cents per 100 pounds, minimum weight 20,000 pounds; 98½ cents per 100 pounds, minimum weight 12,000 pounds.

TABLE 2.—*Freight and express rates on oysters from principal points of production to cities surveyed, 1930*—Continued

From→ / To ↓	New York, N. Y.			Greenport, N. Y.			Providence, R. I.		
	Freight		Express	Freight		Express	Freight		Express
	C. L.	L. C. L.	L. C. L.	C. L.	L. C. L.	L. C. L.	C. L.	L. C. L.	L. C. L.
Washington, D. C.	70	105	139	87½	131	154	85½	129	184
Baltimore, Md.	65	97½	124	82½	124	139	78	117	169
Denver, Colo.	359	486½	581	373	500½	592	359	486½	615
Oklahoma City, Okla.	266	313	472	286	336	499	275	323	510
Kansas City, Mo.	229½	332½	386	243½	346½	401	229½	332½	412
Des Moines, Iowa	202½	297½	360	216½	311½	371	202½	297½	397
St. Paul, Minn.	195	292½	394	217	318	416	225½	311	420
St. Louis, Mo.	166	249	300	180	263	326	166	249	337
Chicago, Ill.	142	213	285	156	227	296	142	213	300
Buffalo, N. Y.	79	118½	184	93	132½	199	84	126	210
Columbus, Ohio	111	166½	244	125	180½	262	111	166½	270
Chattanooga, Tenn.	137	294	292	153	328½	307	149	319½	311
Birmingham, Ala.	151	322½	315	167	357	334	230	345	345
Atlanta, Ga.	135	289½	304	151	324	315	209	313½	319

NOTE.—Express rates in cents per 100 pounds applicable on oysters, shucked, in glass jars, canned, or in bulk.

Except as otherwise indicated by reference mark rates are second class.

Carload rates on oysters, shucked, are not published. Shipments of carloads will take the rates shown as less-carload with minimum billing weight of 12,000 pounds.

The following "estimated weights" will apply on oysters in glass jars, canned or in bulk, moving under second-class rates: When shipped in bulk, estimate at 12 pounds per gallon (United States standard measure); shippers must mark upon each package the number of gallons contained therein. If forwarded in refrigerators weighing gross in excess of 200 pounds, charge on the basis of rule 1 (h) of the Official Express Classification, I. C. C. No. 150. In glass jars, estimate 24 pints at 45 pounds, 36 pints at 65 pounds, 48 pints at 90 pounds, and 48 half-pints at 50 pounds. The following estimated weights will apply to oysters in metal cans with or without ice, when packed in boxes; ⅛-gallon cans, 1¼ pounds each; pint cans, 1½ pounds each; standard or ¾ cans, 2 pounds each; ½-gallon cans, 2½ pounds each; full quart cans, 3 pounds each; half-gallon cans, 6 pounds each; gallon cans, 12 pounds each. Shippers must mark the exact number and the kind of cans on the case. Gross weight at time of shipment will apply when less than the estimated weights shown above. The minimum billing weight for any single shipment of oysters is 30 pounds unless the actual gross weight is less, or unless the percentage allowance from gross weight authorized in rule 1 (h) of the Official Express Classification, I. C. C. No. 150, makes a lower billing weight. Carloads—Minimum billing weight, 12,000 pounds on the following basis: Shucked oysters in carriers, estimated at 12 pounds per gallon; shucked oysters in naked cans without other packing, charge on the basis of actual weight of the oysters and containers. No charge will be made for transportation of necessary chopped ice, packed on top or around the cans; nor, when refrigerator cars are used, will any charge be made for transportation of ice in the bunkers. The cost of all ice furnished by the express company must be paid by shipper or consignee. Rule 1 (h), Official Express Classification, I. C. C. No. 150: Unless otherwise provided, charges on second-class matter must be based upon the gross weight of the shipment at the time it is received for transportation, provided, however, that when it is necessary to use ice for preservation, and it is used for that purpose only, an allowance of 25 per cent from the gross weight will be made from March to November, inclusive, and an allowance of 15 per cent from gross weight will be made from December to February, inclusive, but the weight so ascertained must not be less than the gross weight of the shipment without the ice. Ice referred to in the foregoing item includes only water ice (frozen water). It does not include any other refrigerating agent manufactured from chemicals or gases.

TABLE 3.—*Trade during the week in retail stores marketing oysters*

Day	Washington, D. C.	Baltimore	Denver	Oklahoma City	Kansas City	Des Moines	St. Paul	St. Louis
	Per cent	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*
Monday	6.66	4.21	3.56	3.50	4.50	8.40	6.00	6.45
Tuesday	13.33	11.84	9.78	10.00	13.50	16.40	12.00	11.46
Wednesday	17.78	14.21	11.22	10.00	17.30	16.40	20.00	19.27
Thursday	20.56	22.63	33.22	14.67	21.40	19.40	26.00	19.73
Friday	26.11	20.79	28.33	31.50	24.80	21.00	20.00	21.09
Saturday	15.56	26.32	13.89	30.33	18.50	18.40	16.00	22.00

Day	Chicago	Buffalo	Columbus	Chattanooga	Birmingham	Atlanta	Total
	Per cent	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*
Monday	8.92	7.89	7.50	8.20	8.66	10.00	6.75
Tuesday	13.15	12.33	14.17	10.20	14.50	14.29	12.59
Wednesday	20.54	18.00	18.33	19.40	15.67	17.86	16.78
Thursday	18.62	19.11	19.17	18.40	19.83	20.71	20.99
Friday	20.15	21.11	20.00	21.40	20.67	22.14	22.54
Saturday	18.62	21.56	20.83	22.40	20.67	15.00	20.35

TABLE 4.—*Housewives' reactions to oysters as a food*

Items	Washington, D. C.	Baltimore	Denver	Oklahoma City	Kansas City	Des Moines	St. Paul	St. Louis
What points liked:	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*
Taste	63.1	85.2	68.5	69.6	85.6	72.9	95.8	79.6
Food value	10.8	44.5	29.6	67.4	57.7	21.4	54.3	26.2
Economy	.9	13.9	.9	2.2	1.9	10.0	17.0	1.9
Ease of preparation	17.1	25.0	17.6	50.0	7.7	40.0	67.0	5.8
Other (checked)		1.9						
What points disliked:								
Taste	30.6	5.6	27.8	26.1	1.9	14.3		
Insanitary packing plants	.9	8.3		6.5	.9	8.6	1.7	
Cause illness	12.6	4.6	.9	2.2		10.0		
Tough	.9		.9					
Not fresh	.9		8.3					
Family dislike	.9	.9						
Religion	.9		3.7					
Appearance	.9				.9		1.7	
On a diet	.9							
Price		.9	1.8		27.9	12.8		
Not used to them			2.7					

Items	Chicago	Buffalo	Columbus	Chattanooga	Birmingham	Atlanta	Total
What points liked:	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*
Taste	56.4	73.0	76.0	66.4	90.3	97.1	77.2
Food value	61.6	22.0	34.6	10.3	11.8	58.6	36.0
Economy	2.6		.9		1.1	15.4	5.0
Ease of preparation	19.7	26.0	14.42	24.3	22.6	70.2	28.2
Variety	18.8					.9	1.7
Family likes	4.3						.4
Other (checked)	17.0						.3
What points disliked:							
Taste	11.9	23.0	11.5	19.6	3.2	4.8	12.3
Insanitary packing plants	2.6	2.0	.9	1.9	1.1	29.8	4.5
Cause illness	6.8	5.0		14.0		10.5	4.8
Tough							.1
Not fresh						2.9	.9
Family dislike							.1
Religion		2.0					.5
Appearance	7.7						.9
On a diet							.7
Price	1.7	25.0	.9	8.4	2.2		5.7
Not used to them							.2
Other (checked)		1.0					.7

TABLE 5.—*Housewives' reactions to the purchase of oysters*

[Answers in the affirmative expressed in per cent]

Questions asked	Washington, D. C.	Baltimore	Denver	Oklahoma City	Kansas City	Des Moines	St. Paul	St. Louis
1. Do you read newspapers for menu suggestions?	55.9	56.5	40.0	36.9	78.9	65.7	58.5	42.7
2. Do you buy oysters by brand?	2.3	64.8	13.7	40.5	69.3	10.0	56.7	66.0
3. Do you prefer to buy oysters in a unit package?	2.4	6.2	13.2	51.2	12.7	7.6	.8	45.7
4. Do you prefer to buy oysters in bulk?	97.7	33.8	86.8	48.8	87.3	92.4	99.2	54.3
5. Do you care to have sent to you a circular giving 98 ways to prepare oysters?	38.7	60.0	42.6	71.7	96.1	78.6	98.4	70.8

Questions asked	Chicago	Buffalo	Columbus	Chattanooga	Birmingham	Atlanta	Total
1. Do you read newspapers for menu suggestions?	53.8	8.0	37.5	26.2	49.5	54.8	47.6
2. Do you buy oysters by brand?	20.8	45.3	8.9	19.6	80.8	91.2	45.4
3. Do you prefer to buy oysters in a unit package?	1.5	1.3	35.7	5.8	9.8	51.6	17.7
4. Do you prefer to buy oysters in bulk?	98.5	98.7	64.3	94.2	90.2	48.4	82.3
5. Do you care to have sent to you a circular giving 98 ways to prepare oysters?	75.3	31.0	71.5	64.4	87.4	97.1	69.8

TABLE 6.—*Frequency (number of times served per season) with which oysters were served by housewives*

Cities	One	Two	Three	Four	Five	Six	Seven	Eight	Twelve	Sixteen	Twenty
	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.
Washington, D. C	13.5	8.1	7.2	.....	1.8	0.9	.....	14.4	.....	12.6	.....
Baltimore, Md	.....	.....	.....	.....	.....	.9	.....	6.5	.....	16.7	.....
Denver, Colo	1.2	4.9	2.4	1.2	1.2	2.4	..	50.0	1.2	4.9	.. ..
Oklahoma City, Okla	16.7	13.9	.....	2.8	2.8	.....	.....	19.4	.....	16.7	.....
Kansas City, Mo	2.0	18.4	17.4	12.2	.....	.....	.....	15.3	1.0	14.3	.....
Des Moines, Iowa	6.3	14.1	10.9	9.3	1.6	9.3	1.6	15.6	.....	6.3	.....
St. Paul, Minn	.9	3.3	.....	4.2	.....	5.1	.....	5.1	.9	14.4	0.9
St. Louis, Mo	.....	3.0	.....	.....	.....	.....	.....	38.9	.....	6.8	3.8
Chicago, Ill	.....	9.0	3.8	12.8	....	1.3	.	23.2	.....	11.6	.. ..
Buffalo, N. Y	1.3	44.9	.....	.....	.....	.....	.....	16.7	.....	1.3	.....
Columbus, Ohio	1.1	20.9	.....	3.3	2.1	.....	.....	23.1	2.1	12.2	.....
Chattanooga, Tenn	4.8	9.5	.....	1.2	.....	.....	.....	51.2	1.2	.....	.....
Birmingham, Ala	1.1	1.1	3.4	5.7	.....	4.6	.....	32.9	1.1	17.1	.....
Atlanta, Ga	.....	4.0	.....	10.9	3.0	.....	.....	3.0	16.8	3.0	12.9
Total	2.97	10.42	3.31	4.54	.83	1.74	.08	22.26	1.98	10.17	1.48

Cities	Twenty-four	Twenty-eight	Thirty-five	Fifty-two	Seventy	Eighty-seven	One hundred and five	One hundred and twenty-two	Indefinite	Total consuming
	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.
Washington, D. C	1.8	.....	15.4	.....	2.7	.....	.....	.....	.....	78.4
Baltimore, Md	2.8	.....	48.1	3.7	6.5	.....	0.9	.....	7.9	93.5
Denver, Colo	.....	.....	24.5	.....	1.2	.....	.....	.....	4.9	75.9
Oklahoma City, Okla	.....	.....	22.2	.....	.....	.....	.....	.....	5.5	78.3
Kansas City, Mo	.....	.....	14.3	.....	.....	.....	.....	.....	5.1	94.2
Des Moines, Iowa	3.1	.....	12.5	.....	3.1	.....	.....	.....	6.3	91.4
St. Paul, Minn	5.9	.....	29.6	.9	12.7	.....	13.5	1.7	.9	100.0
St. Louis, Mo	.....	.....	41.8	.....	1.9	.....	.....	.....	3.8	100.0
Chicago, Ill	1.3	.....	20.3	.....	2.6	.....	.....	1.3	12.8	66.7
Buffalo, N. Y	.....	.....	29.4	.....	2.6	.....	.....	.....	3.8	78.0
Columbus, Ohio	1.1	.....	15.4	.....	3.3	.....	.....	.....	15.4	87.5
Chattanooga, Tenn	.....	.....	22.6	.....	5.9	.....	.....	.....	3.6	78.5
Birmingham, Ala	1.1	.....	21.7	.....	3.4	.....	1.1	.....	5.7	94.6
Atlanta, Ga	.....	4.9	10.9	12.9	5.9	4.9	2.0	.....	4.9	97.1
Total	1.46	.41	24.73	1.48	4.22	.41	1.65	.24	5.62	86.8

TABLE 7.—*Methods for preparing oysters by housewives*

How prepared	Washington, D. C.	Baltimore	Denver	Oklahoma City	Kansas City	Des Moines	St. Paul	St. Louis
	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent
Soup	8.1	0.9	25.9	21.7	2.9	20.0	2.5	.....
Stew	58.6	60.2	34.3	17.4	76.0	61.5	78.0	61.2
Potpie	5.4	2.8	.....	.....	.....	.....	.....	.....
Fry	49.5	53.7	20.4	47.8	74.0	28.6	35.6	15.5
Creamed	3.6	4.6	.....	.....	.....	.....	.....	.....
Broiled	1.8	7.4	.....	.....	.....	.....	.....	.....
Raw	9.0	9.3	13.0	6.5	8.7	2.8	24.6	29.1
Scalloped	12.6	11.9	13.9	8.7	32.7	30.1	28.8	.....
Dressing	.....	.....	6.5	4.4	18.3	11.4	11.9	1.9
Panned	1.8	4.6	.....	.....	.....	.....	.....	.....
Fritters	.9	.....	.....	.....	.....	.....	.....	.....
Broth	.9	.....	.....	.....	.....	.....	.....	.....
Baked	.....	.9	.....	.....	.....	.....	32.2	14.6
Salad	.....	.....	.....	.....	2.9	.....	13.5	.....
Oyster loaf	.....	.....	.....	.....	.....	.....	.....	.9
Other (checked)	.....	.9	.....	.....	.....	.....	.....	.....

TABLE 7.—*Methods for preparing oysters by housewives*—Continued

How prepared	Chicago	Buffalo	Columbus	Chattanooga	Birmingham	Atlanta	Total
	Per cent	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*
Soup	17.9	12.0	13.5	12.2	2.2		9.3
Stew	35.0	42.0	47.1	38.3	18.3	78.9	52.0
Potpie	1.7						.8
Fry	33.3	9.0	45.2	38.3	49.5	57.7	39.8
Creamed	1.7						.8
Broiled	1.7	1.0				1.9	1.1
Raw	23.9	35.0	6.7	.9	4.3	19.2	14.5
Scalloped	15.4	7.0	22.1	10.3	2.2	2.9	14.3
Dressing	.8		5.8	1.9	3.2	8.7	5.2
Panned	3.4						.8
Fritters							.05
Broth		1.0					.1
Baked				.9	1.1		4.0
Salad	2.6						1.6
Oyster loaf							.05
Other (checked)	.8						.1

TABLE 8.—*Meals at which oysters were served by housewives*

Meal at which served	Washington, D. C.	Baltimore	Denver	Oklahoma City	Kansas City	Des Moines	St. Paul	St. Louis
	Per cent	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*
Breakfast		2.8	0.9	2.17				0.9
Luncheon	6.31	35.2	15.7	19.6	8.7	7.1	64.4	13.6
Dinner	73.9	88.9	63.9	71.7	92.3	80.0	92.4	84.5
Supper	4.5	2.8	2.8		.9	1.43	25.4	
Other (not specified)		3.7					10.3	

Meal at which served	Chicago	Buffalo	Columbus	Chattanooga	Birmingham	Atlanta	Total
	Per cent	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*
Breakfast	3.4		1.9	1.9			0.1
Luncheon		0.5	.9	14.9	7.5	30.8	16.9
Dinner	58.1	74.0	70.2	63.6	88.2	92.3	78.2
Supper					1.1	3.8	3.4
Other (not specified)			1.9			.9	1.3

TABLE 9.—*Replies concerning the consumption of oysters*

Cities	Consuming		Not consuming		Total number interviewed
	Number	Per cent	Number	Per cent	
Washington, D. C	87	78.4	24	21.6	111
Baltimore, Md	101	93.5	7	6.5	108
Denver, Colo	82	75.9	26	24.1	108
Oklahoma City, Okla	36	78.3	10	21.7	46
Kansas City, Mo	98	94.2	6	5.8	104
Des Moines, Iowa	64	91.4	6	8.6	70
St. Paul, Minn	118	100.0			118
St. Louis, Mo	103	100.0			103
Chicago, Ill	78	66.7	39	33.3	117
Buffalo, N. Y	78	78.0	22	22.0	100
Columbus, Ohio	91	87.5	13	12.5	104
Chattanooga, Tenn	84	78.5	23	21.5	107
Birmingham, Ala	88	94.6	5	5.4	93
Atlanta, Ga	101	97.1	3	2.9	104
Total	1,209	86.8	184	13.2	1,393

TABLE 10.—*Per capita consumption of oysters in the cities surveyed*

Cities	Families canvassed [1]	Pounds used per year	Average number of pounds consumed per family per year	Average number of persons per family, 1920 [2]	Per capita consumption
	Number				
Washington, D. C.	111	1,278	11.5	4.5	2.6
Baltimore, Md.	108	3,307	30.6	4.4	7.0
Denver, Colo.	108	1,272	11.8	4.1	2.9
Oklahoma City, Okla.	46	484	10.5	4.3	2.4
Kansas City, Mo.	104	1,036	9.9	4.0	2.5
Des Moines, Iowa	70	775	11.1	4.0	2.8
St. Paul, Minn.	118	4,877	41.3	4.3	9.6
St. Louis, Mo.	103	2,250	21.8	4.1	5.3
Chicago, Ill.	117	1,380	11.8	4.3	2.7
Buffalo, N. Y.	100	1,182	11.8	4.4	2.7
Columbus, Ohio	104	1,363	13.1	4.0	3.3
Chattanooga, Tenn.	107	1,447	13.5	4.0	3.4
Birmingham, Ala.	93	1,637	17.6	4.2	4.2
Atlanta, Ga.	104	3,018	30.0	4.1	7.3
Total	1,393	25,306	17.6	4.2	4.2

[1] Each housewife (potential consumer) interviewed is figured to represent one family.
[2] Vol. II, U. S. Bureau of the Census Report, 1920.

TABLE 11.—*Retailers' reactions to the sale of oysters*

[Per cent of affirmative replies]

Questions asked	Washington, D. C.	Baltimore, Md.	Denver, Colo.	Oklahoma City, Okla.	Kansas City, Mo.	Des Moines, Iowa	St. Paul, Minn.	St. Louis, Mo.	Chicago, Ill.	Buffalo, N. Y.	Columbus, Ohio	Chattanooga, Tenn.	Birmingham, Ala.	Atlanta, Ga.	Total
1. Are shucked oysters sold in unit packages as packed at the production point?	----	----	22	----	----	40	60	58	69	56	----	----	----	----	22
2. Do purchasers call for certain brands of oysters?	100	----	33	----	10	20	80	8	31	----	----	----	----	----	18
3. Do purchasers call for certain kinds of oysters?	11	28	22	----	----	----	----	----	----	----	----	----	----	----	7
4. Do purchasers call for certain sizes of oysters?	100	92	100	100	100	100	100	92	100	78	100	100	100	100	96
5. Does the price of oysters affect their sale?	11	48	22	100	90	100	20	58	85	78	50	100	100	100	65

TABLE 12.—*Methods for displaying oysters in retail stores*

Method	Washington, D. C.		Baltimore		Denver		Oklahoma City, shucked	Kansas City		Des Moines, shucked	St. Paul, shucked	St. Louis	
	Shucked	Shell	Shucked	Shell	Shucked	Shell		Shucked	Shell			Shucked	Shell
Shucked stock:	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*
Glass jars	66.7	----	91.2	35.6	100.0	----	----	57.2	100.0	20.0	33.3	46.1	66.7
Stone jars	33.3	----	----	----	----	----	----	----	----	----	16.7	30.8	33.3
Buckets or pails	----	----	4.4	64.4	----	----	----	28.5	----	----	----	----	----
Buckets or cans	----	----	----	----	----	----	----	14.3	----	----	33.3	7.7	----
Shallow porcelain pans	----	----	4.4	----	----	100.0	----	----	----	40.0	----	----	----
Trade-marked sealed unit packages	----	----	----	----	----	----	80.0	----	----	40.0	16.7	15.4	----
Specially constructed cabinets	----	----	----	----	----	----	20.0	----	----	----	----	----	----
Shell stock:													
Baskets	----	55.3	----	----	----	----	----	----	----	----	----	----	----
Barrels	----	33.3	----	----	----	----	----	----	----	----	----	----	----
Not displayed	----	11.4	----	----	----	----	----	----	----	----	----	----	----
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

TABLE 12.—*Methods for displaying oysters in retail stores*—Continued

Method	Chicago		Buffalo		Columbus, shucked	Chattanooga, shucked	Birmingham		Atlanta, shucked	Total	
	Shucked	Shell	Shucked	Shell			Shucked	Shell		Shucked	Shell
hucked stock:	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*
Glass jars	11.1	------	57.2	------	------	------	------	------	------	46.3	21.5
Stone jars	------	------	------	------	100.0	60.0	------	------	------	14.8	2.6
Buckets or pails	------	------	28.5	------	------	------	40.0	66.7	100.0	11.1	28.9
Buckets or cans	------	------	------	------	------	------	20.0	33.3	------	4.6	2.6
Shallow porcelain pans	88.9	100.0	------	100.0	------	------	------	------	------	9.3	21.5
Trade-marked sealed unit packages	------	------	14.3	------	------	------	------	------	------	9.3	------
Specially constructed cabinets	------	------	------	------	------	40.0	40.0	------	------	4.6	------
hell stock:											
Baskets	------	------	------	------	------	------	------	------	------	------	13.2
Barrels	------	------	------	------	------	------	------	------	------	------	7.1
Not displayed	------	------	------	------	------	------	------	------	------	------	2.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

TABLE 13.—*Sales during the season in retail stores marketing oysters*

Month	Washington, D. C.	Baltimore	Denver	Oklahoma City	Kansas City	Des Moines	St. Paul	St. Louis
	Per cent	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*
eptember	5.56	4.00	3.50	1.16	6.00	----------	3.00	3.64
)ctober	8.89	6.75	6.37	5.83	10.00	11.80	7.00	10.00
Jovember	18.33	16.00	12.50	19.17	20.00	17.80	20.00	21.36
)ecember	23.89	19.75	21.88	21.67	20.50	18.80	20.00	21.82
anuary	19.44	19.25	21.75	21.67	19.50	18.20	20.00	20.91
'ebruary	11.11	18.50	18.00	17.50	11.00	15.80	14.00	11.82
Aarch	7.22	11.00	9.50	8.33	9.00	10.80	12.00	8.45
pril	5.56	4.75	6.50	4.67	4.00	6.80	4.00	2.00

Month	Chicago	Buffalo	Columbus	Chattanooga	Birmingham	Atlanta	Total
	Per cent	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*
eptember	3.85	5.00	5.00	2.00	0.84	1.43	3.03
)ctober	9.23	10.00	11.67	8.00	6.67	10.00	8.72
Jovember	19.23	19.44	18.33	18.00	20.83	19.28	18.61
)ecember	20.00	20.56	19.17	25.00	22.50	23.56	21.17
anuary	19.61	20.00	19.17	20.00	20.00	21.43	20.11
'ebruary	14.61	11.67	13.33	14.00	15.83	13.57	14.59
Aarch	8.85	8.89	10.00	8.00	8.33	7.86	9.39
pril	4.62	4.44	3.33	4.00	5.00	2.86	4.38

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